Mandatory Compression Therapy and Daily Blood Pressure Monitoring in Vasovagal Syncope: An Evidence-Based Critique

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Abstract

Vasovagal syncope (VVS) is the most common form of fainting and is caused by a reflexive response of the autonomic nervous system that results in sudden drops in heart rate and blood pressure. Although VVS is generally considered benign, there are ongoing debates regarding appropriate management strategies for athletes diagnosed with the condition. Some arguments support the use of mandatory compression garments and routine daily blood pressure monitoring as preventative safety measures. However, current medical research does not support these interventions as effective or evidence-based treatment strategies for VVS. Instead, research demonstrates that individualized care, trigger management, hydration, and counter-pressure maneuvers are more appropriate approaches. This paper argues that mandatory compression therapy and daily blood pressure monitoring are not justified in the management of vasovagal syncope because they misunderstand the physiology of the condition, lack strong clinical evidence, and may worsen symptoms through anxiety and hypervigilance.

Vasovagal Syncope

Vasovagal syncope (VVS) is the most common form of fainting and is caused by a reflexive response of the autonomic nervous system that results in sudden drops in heart rate and blood pressure. Although the condition is generally considered benign, it remains misunderstood in athletic settings where safety concerns often lead to unnecessary restrictions or interventions. In recent years, some medical and athletic professionals have argued that athletes diagnosed with vasovagal syncope should be required to wear compression garments and undergo routine daily blood-pressure monitoring in order to reduce risk and improve safety. Supporters of these interventions claim that they improve circulation, reduce fainting episodes, and provide precautionary protection for athletes. However, current scientific evidence does not support these interventions as effective treatment strategies for VVS.

This paper argues that mandatory compression therapy and daily blood-pressure monitoring are not evidence-based management strategies for vasovagal syncope. Research demonstrates that these interventions misunderstand the pathophysiology of the condition, lack strong clinical support, and may increase anxiety and hypervigilance that can worsen symptoms. Instead, modern syncope guidelines emphasize individualized care, hydration, education, trigger recognition, and physical counter-pressure maneuvers. Through an examination of medical literature, clinical guidelines, and recent randomized controlled trials, this paper demonstrates why blanket mandatory interventions are medically and ethically unjustified for athletes living with VVS.

Understanding Vasovagal Syncope

Vasovagal syncope is classified as a type of reflex syncope involving abnormal autonomic nervous system activation. During an episode, the body experiences sudden vasodilation and bradycardia, reducing blood flow to the brain and causing temporary loss of consciousness. Common triggers include dehydration, emotional stress, pain, prolonged standing, or fear. Unlike conditions such as orthostatic hypotension or postural orthostatic tachycardia syndrome (POTS), VVS is not primarily caused by chronic blood pooling in the legs. Instead, it results from a reflexive autonomic response that temporarily destabilizes blood pressure and heart rate.

Clinical guidelines from the European Society of Cardiology and the American Heart Association consistently emphasize conservative management approaches rather than aggressive interventions. Recommended treatment strategies include increasing hydration and sodium intake, recognizing warning signs, avoiding known triggers, and using physical counter-pressure maneuvers such as leg crossing or muscle tensing during prodromal symptoms. Education and individualized care are repeatedly emphasized because every patient experiences the condition differently.

For athletes, vasovagal syncope can create unique concerns because of the physical demands of training and competition. However, evidence indicates that syncope in young athletes is usually benign once cardiac causes are excluded. Many athletes continue participating safely by recognizing warning signs such as dizziness, nausea, sweating, or tunnel vision. These prodromal symptoms allow individuals to stop activity and prevent injury before loss of consciousness occurs. Therefore, effective management depends on awareness and individualized prevention rather than broad restrictions or mandatory interventions.

The Problem with Compression Therapy

Supporters of compression therapy argue that compression garments improve venous return and circulation, thereby preventing fainting episodes. Compression garments are commonly used in conditions involving venous insufficiency or orthostatic intolerance because they reduce blood pooling in the lower extremities. However, applying this logic directly to vasovagal syncope is problematic because VVS is not fundamentally caused by venous pooling.

The most important evidence against mandatory compression therapy comes from the COMFORTS-II randomized sham-controlled trial published in the Journal of the American College of Cardiology in 2025. This study directly evaluated thigh-high compression stockings in patients with recurrent vasovagal syncope. Researchers found no statistically significant reduction in recurrence rates among participants wearing active compression stockings compared to those wearing sham garments. Time to first recurrence and overall episode frequency also failed to significantly improve.

These findings are significant because they directly challenge the assumption that compression garments effectively prevent vasovagal episodes. The reflexive autonomic mechanism responsible for VVS cannot be corrected simply by improving venous return.

Compression garments may theoretically support circulation, but they do not interrupt the vagal activation and vasodilation that define the condition.

Older research has reached similar conclusions. Studies involving tilt-table testing and calf-length compression stockings found little improvement in orthostatic tolerance or hemodynamic measures. Researchers also observed highly individualized responses depending on body composition and anthropometric characteristics. This variability further weakens arguments supporting universal compression requirements.

Practical concerns also undermine the use of mandatory compression garments. Athletes frequently report discomfort, heat retention, restricted movement, sweating, skin irritation, and difficulty applying compression garments consistently. Research on therapeutic adherence demonstrates that discomfort significantly reduces long-term compliance. If athletes are unable or unwilling to wear compression garments regularly, the intervention loses practical value in real-world settings.

Daily Blood Pressure Monitoring and Hypervigilance

Another intervention often proposed for athletes with VVS is daily blood-pressure monitoring. Advocates argue that routine monitoring improves safety by detecting abnormalities before episodes occur. However, vasovagal syncope is not a chronic blood-pressure disorder characterized by predictable physiological instability. Episodes occur suddenly and unpredictably through autonomic reflex activation, meaning routine blood-pressure readings provide little predictive value.

No major syncope guideline recommends daily blood-pressure monitoring as a preventative treatment for vasovagal syncope. Instead, evidence suggests that excessive monitoring can increase anxiety and hypervigilance, both of which are known triggers for VVS episodes. Hypervigilance refers to excessive awareness and monitoring of bodily sensations, often leading individuals to become increasingly anxious about symptoms or physiological changes.

Research on psychological stress and autonomic instability demonstrates that emotional distress can worsen vasovagal symptoms by activating autonomic responses associated with fainting. Athletes who are constantly required to monitor their blood pressure may become more fearful of symptoms and more focused on bodily sensations, unintentionally increasing

physiological stress. Rather than improving safety, mandatory monitoring may create conditions that make fainting episodes more likely.

Daily monitoring may also negatively affect an athlete's mental health and confidence. Young athletes often rely heavily on consistency, confidence, and trust in their physical abilities. Constant medical monitoring may reinforce fear surrounding the condition and contribute to feelings of abnormality or fragility. This psychological burden is rarely considered when mandatory monitoring policies are proposed.

The Importance of Individualized Care

Modern evidence-based medicine emphasizes individualized treatment plans rather than universal interventions. Vasovagal syncope varies greatly between individuals, meaning that effective management must account for personal triggers, symptom severity, psychological responses, and athletic demands. Some individuals may benefit from hydration strategies and salt loading, while others require stress-management techniques or modifications to training environments.

Clinical guidelines repeatedly emphasize patient education and individualized symptom management because no single treatment works universally for all VVS patients. Blanket policies mandating compression garments or daily monitoring ignore this reality and fail to consider the psychological and physical effects of interventions on each individual athlete.

For athletes specifically, maintaining conditioning and activity levels can actually support symptom management. Cardiovascular exercise improves circulatory efficiency and autonomic stability, while prolonged inactivity may worsen symptoms through deconditioning. Three weeks or more away from training can negatively impact skill progression, confidence, strength, and coordination. In sports such as gymnastics, where body awareness and conditioning are essential for safety, deconditioning may paradoxically increase injury risk upon return to activity.

Athletes who understand their triggers and recognize prodromal symptoms are often capable of safely continuing participation with reasonable precautions. Education, hydration, nutrition, and early symptom recognition are more aligned with evidence-based management than unsupported mandatory medical interventions.

Concerns

Mandatory compression therapy and daily monitoring also raise ethical concerns regarding autonomy and evidence-based care. Medical interventions should be supported by condition-specific scientific evidence and should balance potential benefits against possible harms. In the case of VVS, the evidence supporting mandatory compression and monitoring is weak, while the psychological and physical downsides are increasingly recognized.

The precautionary principle is sometimes used to justify these interventions. However, precautionary approaches are intended to reduce harm when danger is uncertain, not to impose unsupported treatments that may create additional risks. Compression garments may cause discomfort, anxiety, reduced compliance, and stress, while daily monitoring may contribute to hypervigilance and fear. Therefore, the interventions themselves carry risks that must be considered.

Medical ethics also emphasize respect for patient autonomy and individualized decision-making. Athletes with long-term experience managing VVS often understand their own triggers and warning signs extremely well. Ignoring this lived experience in favor of rigid blanket policies undermines individualized care and may reduce trust between athletes, medical professionals, and athletic organizations.

Conclusion

Current scientific evidence does not support mandatory compression therapy or daily blood-pressure monitoring as effective treatments for vasovagal syncope. Research demonstrates that compression garments fail to significantly reduce recurrence rates in VVS populations, while daily blood-pressure monitoring offers little predictive value and may worsen symptoms through increased anxiety and hypervigilance. Because vasovagal syncope is a reflex-based autonomic condition rather than a chronic circulatory disorder, management strategies should focus on individualized care, hydration, education, trigger recognition, and physical counter-pressure maneuvers.

Athletes living with VVS can often continue participating safely when they understand their triggers and use appropriate self-management strategies. Mandatory interventions that are unsupported by evidence may create unnecessary psychological and physical burdens while failing to meaningfully improve safety. Ethical and medically sound policies should therefore

prioritize individualized evidence-based management rather than blanket requirements. Ultimately, individualized care remains the safest, most effective, and most scientifically supported approach for managing vasovagal syncope in athletic settings.

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